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THE OBVIOUS ALTERNATIVE ENERGY SOURCE

(OR THE BOSS' SOAPBOX STORY)

The secretary nodded to the visitor in Terry Carmody's office as she passed the open door.

"Oh, oh," she thought. "The boss is on his soapbox again."

The Chief of the Solid Waste Management Bureau was leaning forward at his desk talking emphatically.

"I just don't understand it. Everyone is looking for alternative energy sources and no one - not one person mentions solid waste. No one associates the two.

"Solid waste has 5,000 BTU's per pound; that's half as much as Montana coal. And we're never going to run out of solid waste. In fact, it's a problem to dispose of it. We can solve two problems at once but no one is suggesting we create energy from solid waste."

Stopping just short of banging his fist on his desk, Terry paused and leaned back in his swivel chair.

"Solid waste is our only growing resource. It just keeps growing while our other resources dwindle. We should be recovering all of the valuable materials in our garbage. You know, it's been estimated that the nation's garbage could provide 7 percent of the iron, 8 percent of the aluminum, 20 percent of the tin and 14 percent of the paper consumed every year by the whole country. It also takes less energy to manufacture products from recycled materials.

"There are lots of ways to get energy from solid waste after we take the recoverable materials out of it. And the important thing is that it is being done in dozens of cities in the country. The simplest is burning it in a boiler to produce steam or electricity. But it can also be processed into oil and gas products which can be used for fuels. Or waste can be heated with water and air under pressure to generate heat for industrial processes or electricity. It's also possible to produce methane gas from solid waste.

"We'll be looking at all of these possibilities in the Bureau's Resource Recovery study and recommend the best method for Montana. Then we'll have to sell the program to the people of the state.

"In the meantime, everyone is talking about energy - solar, windmills, gasification - on and on. And we're the only people talking about the most obvious alternative energy source - solid waste. I just don't understand it."

The secretary quietly brought in a cup of coffee for the visitor who accepted it eagerly. However, he nearly spilled it as he told Terry earnestly, "There must be a way to make them listen. We've got to try."

RESOURCE RECOVERY STUDY'S FIRST REPORT RELEASED

The first of five major reports to be released with the Resource Recovery Study shows approximately 78 percent of the state's solid waste could be processed at a resource recovery facility. The remaining 22 percent consisting of demolition, inert and organic type materials would require disposal regardless of the degree of resource recovery implemented.

The heat value of this solid waste is approximately 5,000 BTU/lb on an as-received basis. This represents approximately

one-half the heat value of Montana coal on an equivalent BTU basis.

Approximately 590,000 tons of waste will be generated in the state in 1975, the report states. This represents an average rate of 4.28 lbs/person/day. An increase of 36 percent in the quantity of waste is expected by 1990 for a total of 870,000 tons per year generated by an expected 970,770 persons. The population of Montana in 1970 was 694,409.

The following charts were presented in the report based on the research of Montana recently completed.

City Population	Waste Generation Rate (lbs/person/day)
Greater than 5,000	5.70
1,000-5,000	3.25
less than 1,000*	2.25

*includes rural population

Waste Type	Waste Composition (percent by weight)
Paper	38.2
Plastic	5.8
Yard	11.7
Food	19.3
Glass	8.7
Metals	10.6
Other	5.7
TOTAL	100.00

Characteristic	Average Percent by Weight
Moisture content	35.20
Sulfur content	0.19
Ash content	11.30
Heat Value (BTU/lb; as received)	5,039

The Solid Waste Management and Resource Recovery Study was initiated in July 1975 and is to be completed in November 1976. Its primary objective is to design a system for using the combustible fraction of solid waste as an energy source and to locate markets for the recoverable secondary materials found in the state's solid waste stream.

STATE OF UTAH STOPS LANDFILL OPERATION

The Utah Director of Health issued a cease and desist order to the Salt Lake County Board of Commissioners in August pertaining to operation of a temporary Sanitary Landfill site.

The order was the culmination of repeated attempts by the Division of Health to convince county officials they should comply with state regulations, adopted a year earlier, which require submission and approval of plans for new solid waste sites.

The county was advised by letter a month earlier that a site then under consideration was unsatisfactory because of high ground water and the resulting danger of water pollution.

Director Lyman Olsen wrote the Board that, "We cannot take the chance of ignoring the potentials that can develop, that can cost millions of dollars to correct, when we know leachate need not be a problem."

Leachate, pollution washed into water sources from material deposited on or in the ground, can cause serious economic damage. The U.S. Geological survey has documented some
(continued overleaf)

cases of leachate damage, the most serious of which is a Delaware case.

In the Delaware case, the site was operated from 1960 to 1968. Early in its life, it was an open burning dump and received industrial wastes of an unknown character and origin in addition to residential and commercial wastes. A clay layer beneath the site was thought to isolate the landfill from the underlying Potomac aquifer, a major source of water supply for the area.

During the last phase of operation, however, some clay was excavated for cover material and to provide additional disposal space. It turned out the clay layer was locally thin, sandy or absent beneath part of the disposal site. The 60 acre dump was covered with 2 to 5 feet of earth in 1970.

The buried solid waste now receives an estimated 100 to 120 thousand gallons of lateral ground water inflow per day. It also receives an average of 60 to 80 thousand gallons per day of infiltration from precipitation.

In January 1972, a homeowner located 800 feet from the fill complained about the quality of water from her 130-foot-deep well. An investigation by the Delaware Geological Survey, the Delaware Department of Environmental Control and the county department of Public Works showed the old dump to be the source of the contamination.

A water company had installed a well field producing 4 to 5 million gallons per day about 5,000 feet from the landfill but this pumpage accelerated leachate movement from the dump toward the well fields. The company had to reduce its pumping rate and now has to get water from the other water companies in the county at the county's expense.

Another leachate plume from the site extends toward a polypropylene plant east of the disposal site. The plant cut back its water usage and recovery wells are being constructed between the plant and the disposal site to stop and collect the leachate.

One hundred wells or test borings have been drilled by the county to date and a dozen wells are pumping water from the aquifer to create a cone of depression near the site. This has stopped leachate from spreading further and 35 wells are monitored monthly to determine continued effects on the aquifer.

Out of pocket costs for the county for consulting, wells, replacing individual water supplies has been about \$800,000 so far. To completely remedy the situation, the county expects to spend more than \$20 million if the dump must be moved. Furthermore, the county estimates it will take 10 years to restore full usage of the aquifer.

WOULD YOU CALL HIM A "JUNKED CAR JUNKIE?"



Duane Robertson thinks about junked cars five days a week as Project Director of the Junk Vehicle Program for the Solid Waste Management Bureau. He's in charge of reviewing the plans and operations of Montana counties complying with the program.

On weekend, however, you'll find Duane in front of the TV set watching a football game or on the ski slopes or playing basketball and racketball. He says his whole family skis including five-year-old Darci and six-year-old Jennifer and wife, Barbara. Barbara also joins him for racketball, but he's all alone with the football game.

Although Duane joined the Bureau when the Junk Vehicle program was initiated three years ago, he still is excited about his job and living in Helena.

"It was a particularly lucky day," he says, "when Terry (Carmody, bureau chief) called and asked if I wanted the job."

Duane explained. (It was a long story). He met his wife while working in Tracey, California although he's originally from Shelby and an MSU graduate. She was working in San Francisco although she was from Great Falls. They eventually eloped to Reno.

Since neither of them really liked California, Barbara began writing to towns in Montana for a position as a teacher in distributive education. She was offered a job in Polson and they moved there in January 1967. Duane was Lake County sanitarian for the next five years.

While lunching one day in September 1972, Barbara told him she had been offered a job in Helena teaching career development. He went back to work wondering what he would do in Helena. At 3 p.m., Terry called and solved his problem. And that's why Duane still calls it a lucky day.

RAPID RAIL COLLECTION SYSTEM CUTS COSTS

Rapid Rail is a mechanized refuse collection system currently in use in the Arizona cities of Coolidge, Kearny, Casa Grande, Scottsdale, Phoenix and Alliance, Nebraska. Tremendous cost savings can be achieved because of the increased speed of the equipment and because of the reduction in necessary personnel.

The new system is operated entirely by the driver from inside the cab as he drives alongside the barrel, reaches out with hydraulically operated arms and lifts the barrel which dumps the refuse in the truck and sets the barrel back. The entire cycle takes 10 seconds. The barrels are made of polyethylene and come in 90 and 300 gallon sizes. The 300 gallon containers are used by four residences and are stored in alleys. The 90 gallon containers are used for individual residences without alleys. They are equipped with wheels and handles and are easily rolled out for curbside pickup.

One man is able to pick up from 750 families per day using 90 gallon containers. When the 300 gallon alley containers are used he can serve 1800 families per day. When translated into costs this can be as low as \$1.50 per month per family for those using 300 gallon barrels or \$2.00 for those with 90 gallon barrels. These costs include the amortization of the containers.

Another major savings potential lies in the reduction of injuries to personnel. Since the driver-operator never leaves the cab and is not involved in any lifting, injuries can drastically be reduced. This is significant since refuse collection leads the nation in injuries per man-hours worked.

In terms of aesthetics, the containers are uniform in size and color (standard colors are black and light green). The containers are dog-proof and fly-proof which contribute to cleaner alleys.

Because the Rapid Rail device is capable of picking up different size containers, a system can have a mix. The city of Coolidge, Arizona (population 4,500) uses the 300 gallon containers for commercial pickup and is able to operate with one truck for its entire operation with collection done twice a week.

Many city council members of Alliance, Nebraska had second thoughts about the new system before it was implemented and several resident complaints were received, but the city manager Bob Placek now says, "I think we made believers out of them."

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